

Pitfall J CTO score; Same Score Different Strategy




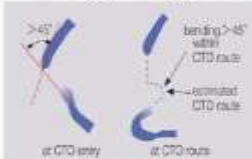
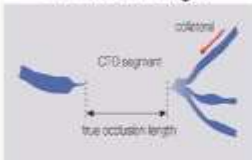
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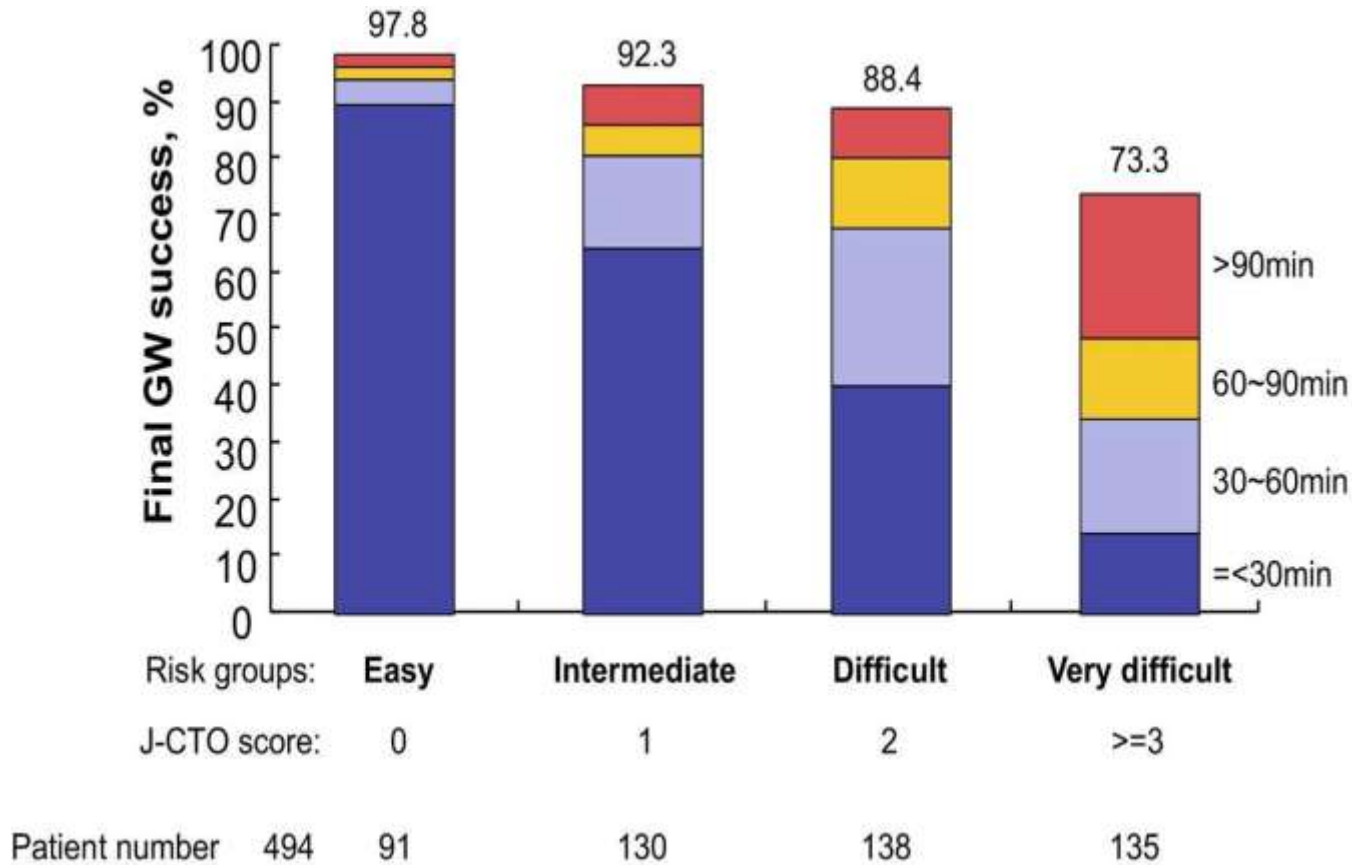
J-CTO (Multicenter CTO Registry of Japan) Score

Variables and definitions		
<p>Tapered</p> 	<p>Blunt</p> 	<p>Entry with any tapered tip or dimple indicating direction of true lumen is categorized as "tapered".</p>
<p>Entry shape</p> <input type="checkbox"/> Tapered (0) <input type="checkbox"/> Blunt (1)		point
<p>Calcification</p> 		<p>Regardless of severity, 1 point is assigned if any evident calcification is detected within the CTO segment.</p>
<p>Calcification</p> <input type="checkbox"/> Absence (0) <input type="checkbox"/> Presence (1)		point
<p>Bending >45degrees</p> 	<p>One point is assigned if bending > 45 degrees is detected within the CTO segment. Any tortuosity separated from the CTO segment is excluded from this assessment.</p>	
<p>Bending >45°</p> <input type="checkbox"/> Absence (0) <input type="checkbox"/> Presence (1)		point
<p>Occlusion length</p> 	<p>Using good collateral images, try to measure "true" distance of occlusion, which tends to be shorter than the first impression.</p>	
<p>Occl.Length</p> <input type="checkbox"/> <20mm (0) <input type="checkbox"/> ≥20mm (1)		point
<p>Re-try lesion</p> <p>Is this Re-try (2nd attempt) lesion? (previously attempted but failed)</p>		<p>Re-try lesion</p> <input type="checkbox"/> No (0) <input type="checkbox"/> Yes (1)
		point

Category of difficult (total point)

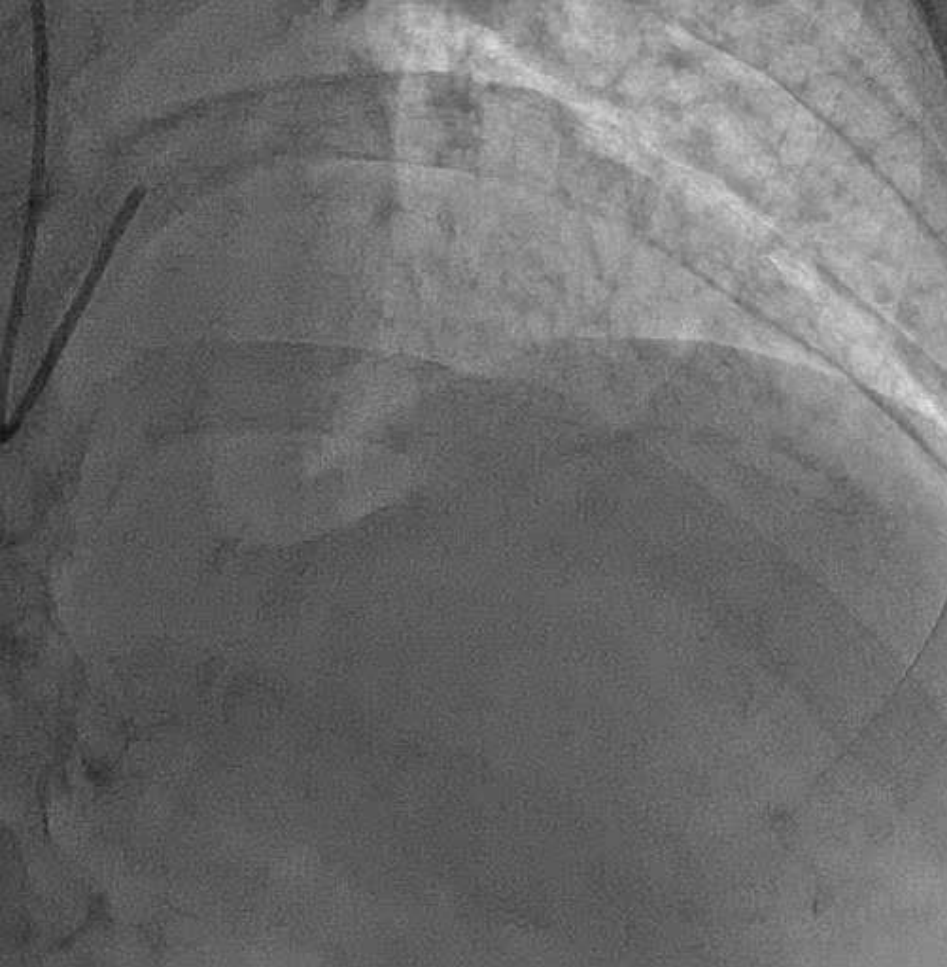
- easy (0)
- intermediate (1)
- difficult (2)
- very difficult (3-5)

Success rate according to J-CTO score



J-CTO score was associated with success and now used to assess difficulty of CTO PCI

Case 1: Baseline angiograms



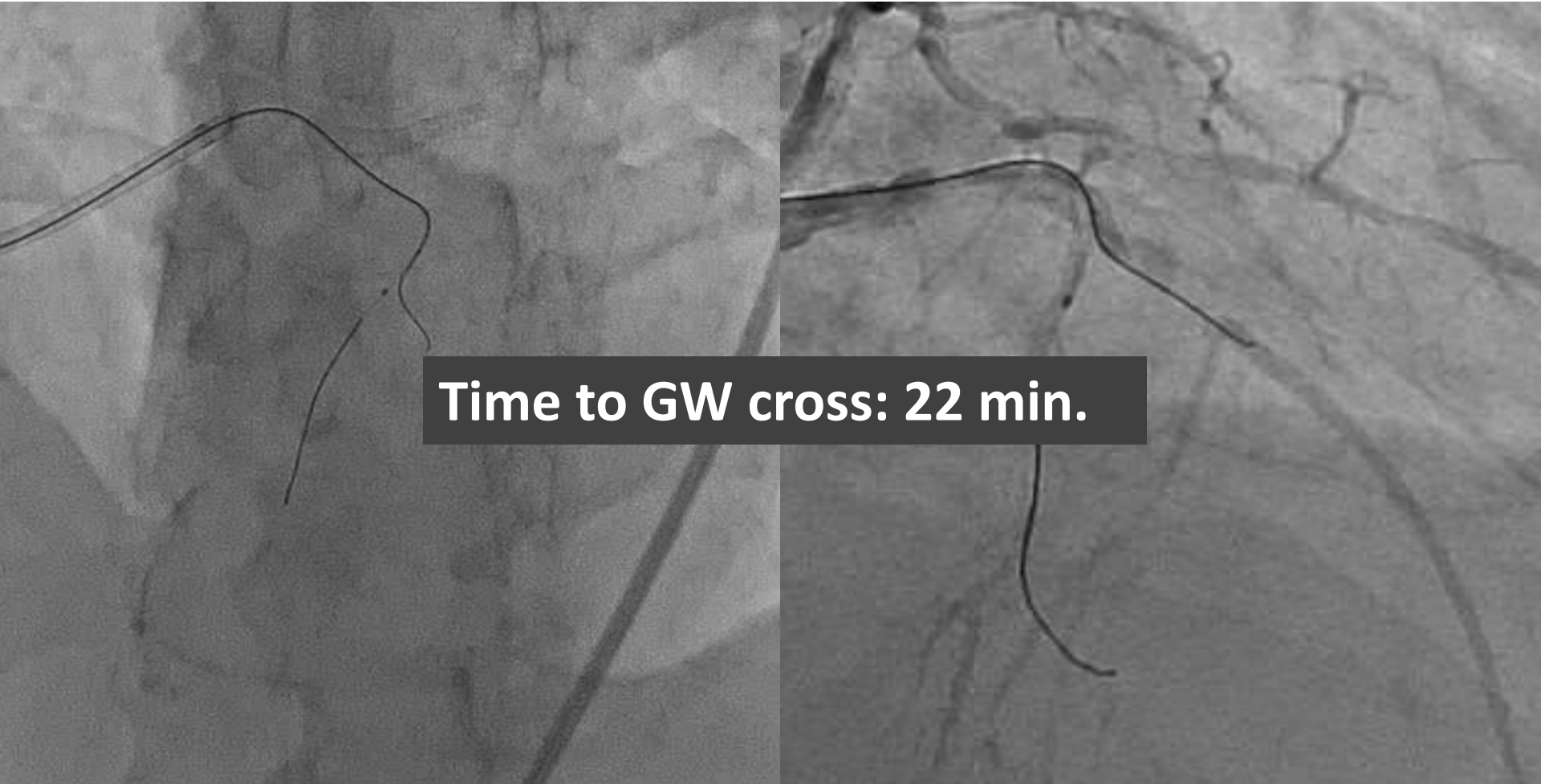
Detail anatomy of the CTO



Clear dimple entry
No calcium
Lesion length < 20mm
No bend
First attempt

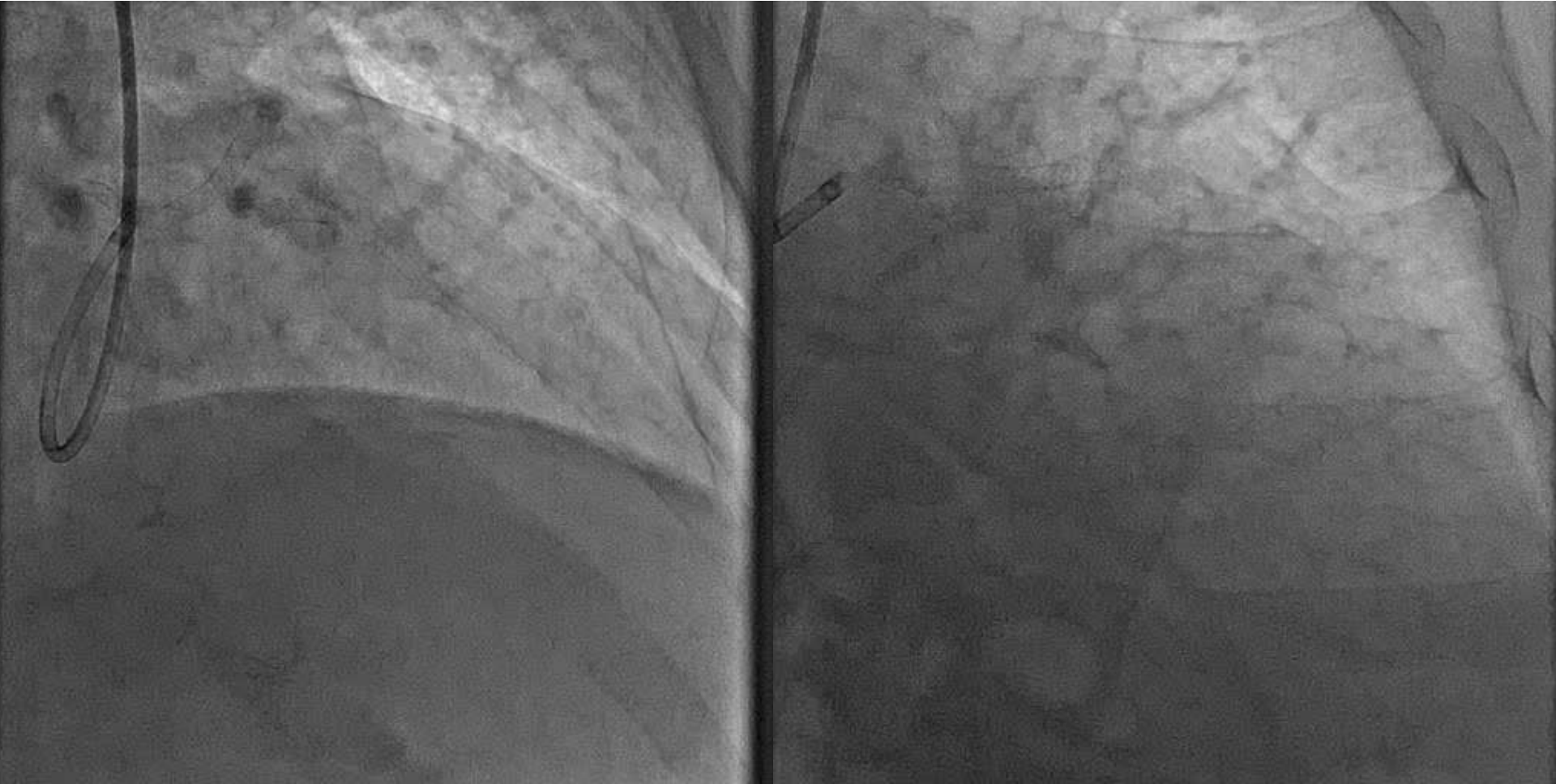
J CTO
score = 0

GW crossed the lesion

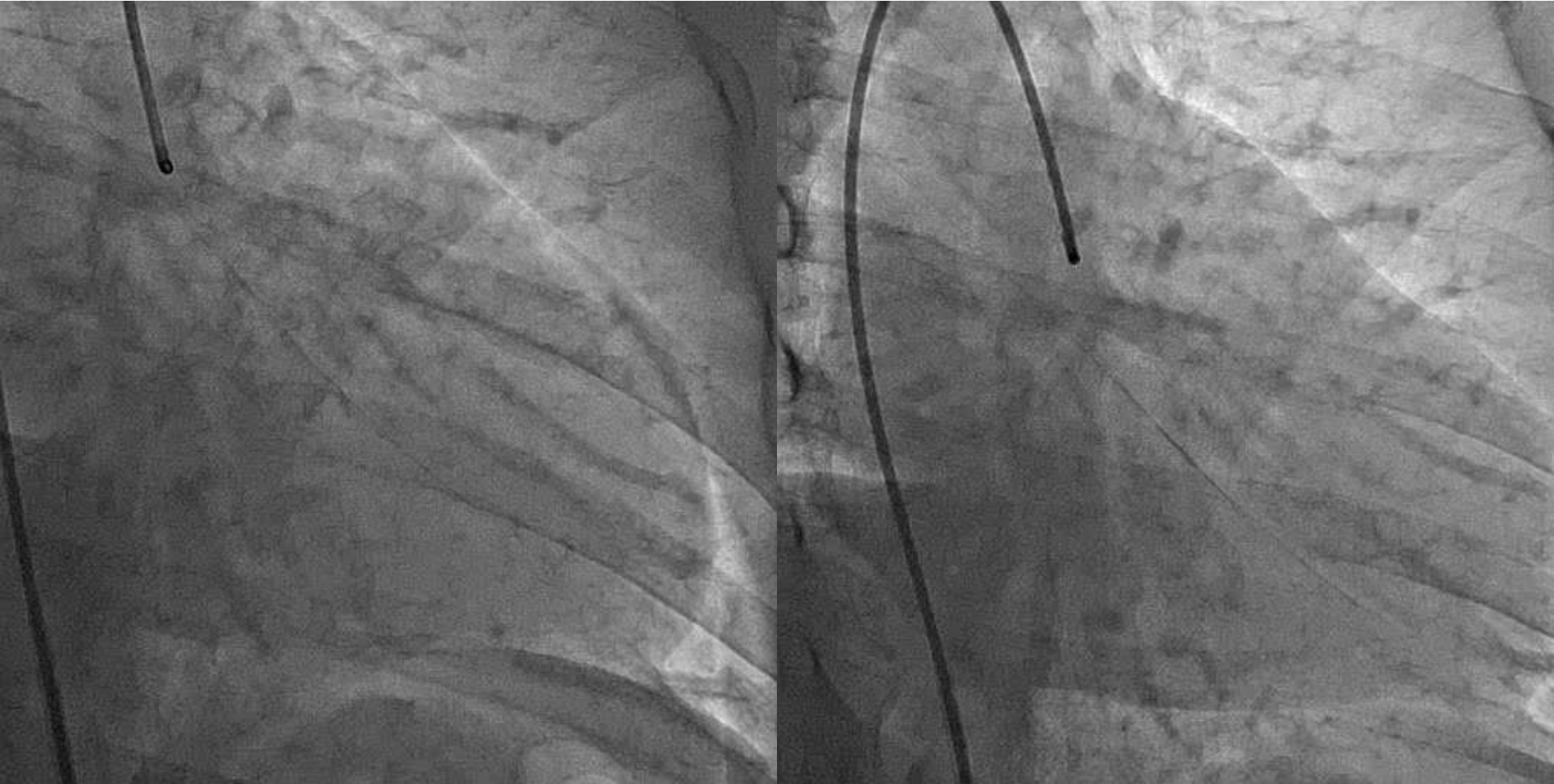


Time to GW cross: 22 min.

Final angiograms

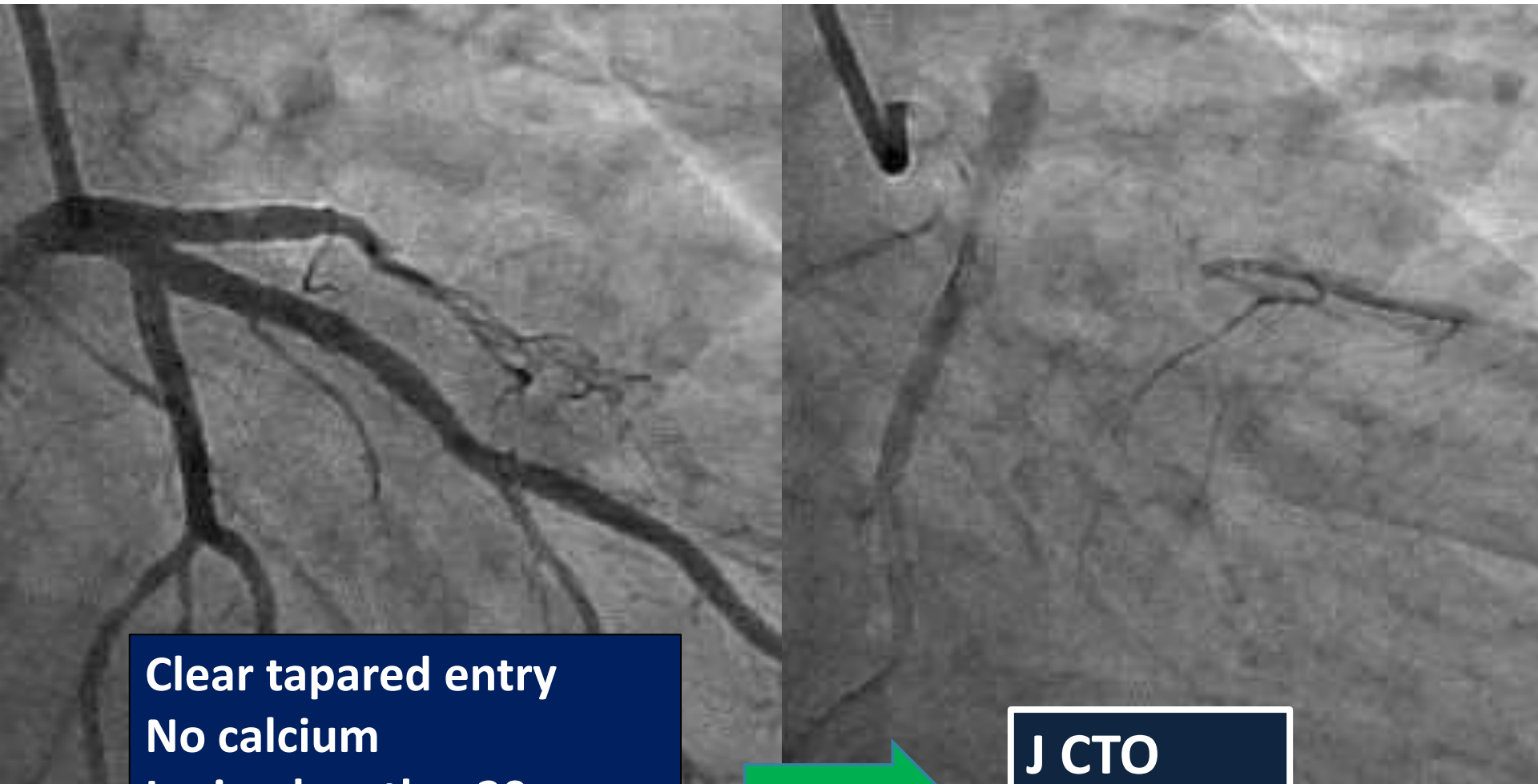


Case 2: Baseline angiograms



Main collateral is tortuous epicardial RV branch.

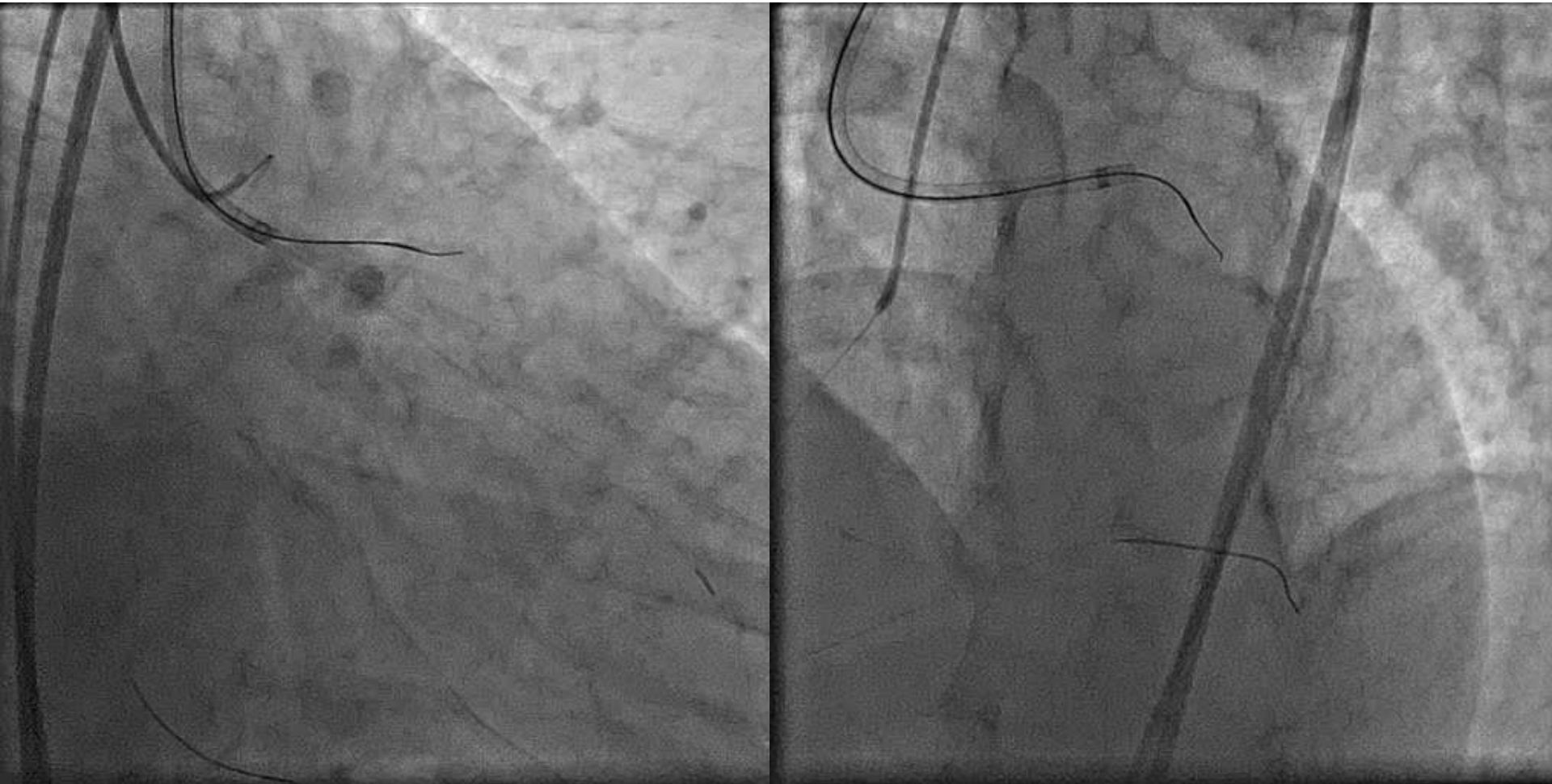
Detail anatomy of the CTO



**Clear tapered entry
No calcium
Lesion length < 20mm
No bend
First attempt**

**J CTO
score = 0**

Antegrade approach



Antegrade approach was failed due to a poor distal target

Retrograde approach

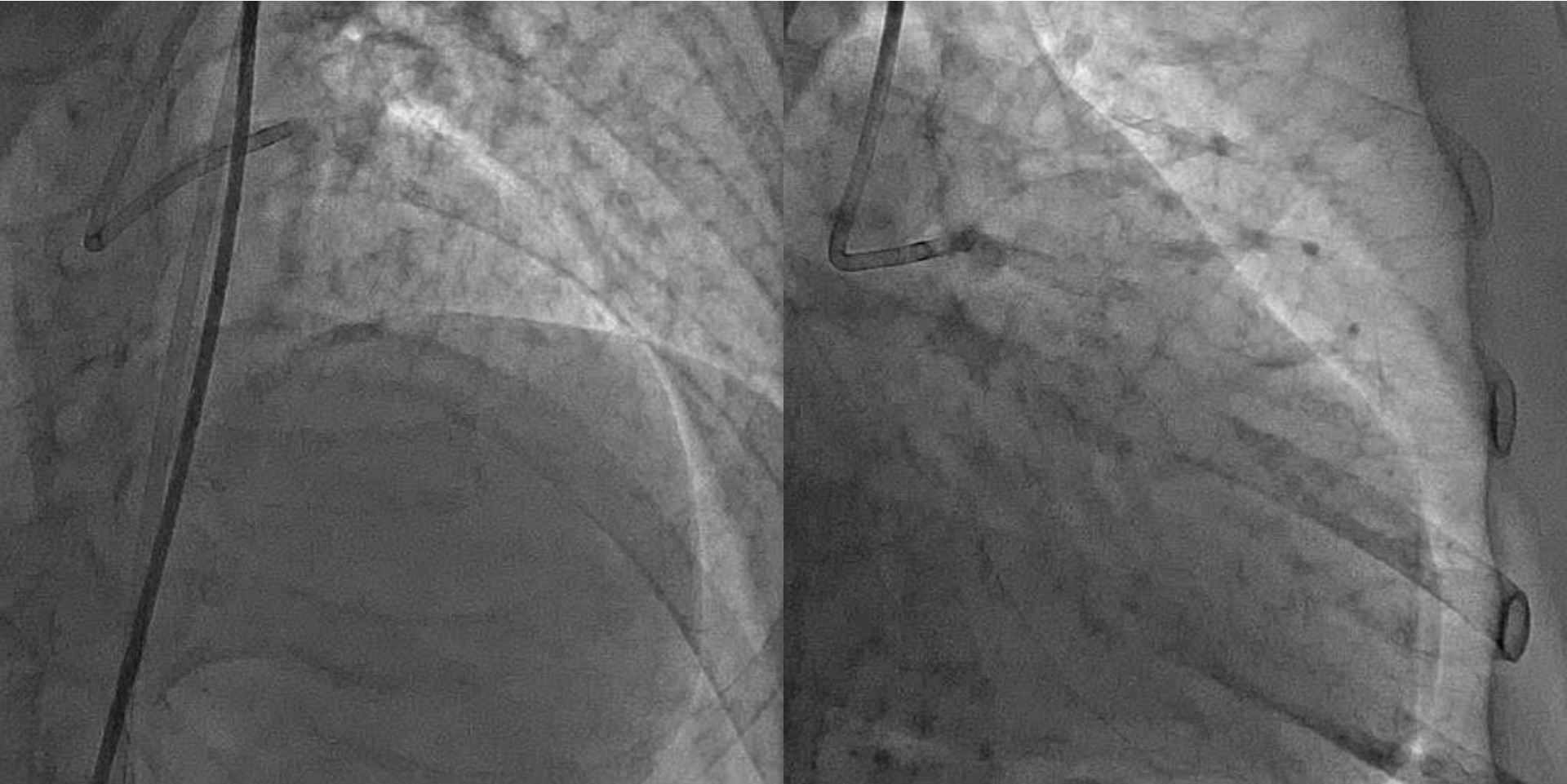
Time to GW cross: 107 min
58 min after switched retrograde approach

Very di

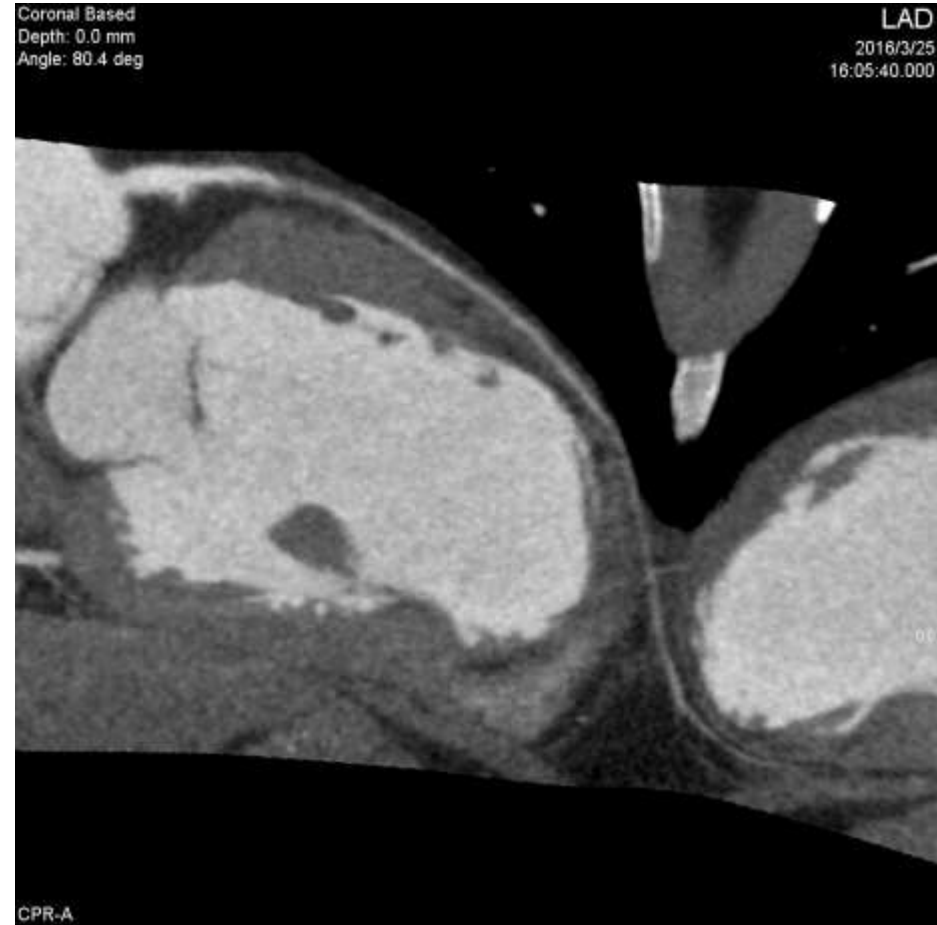
GW su

Unable Antegrade w

Final angiograms

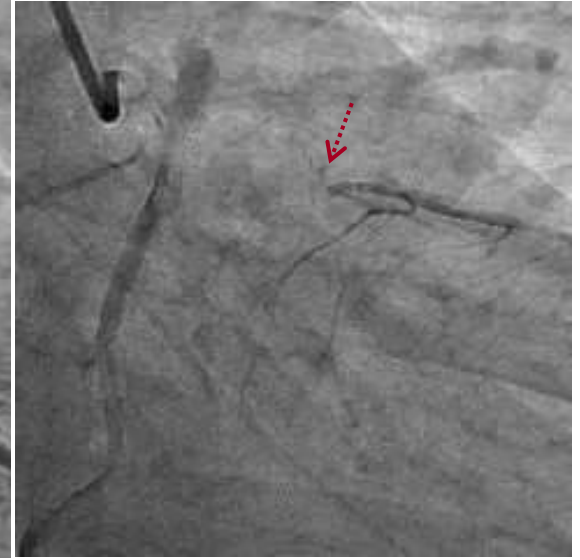
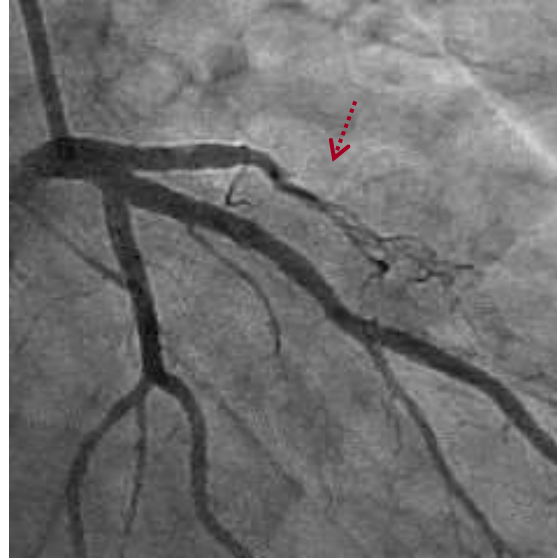


Coronary CTA



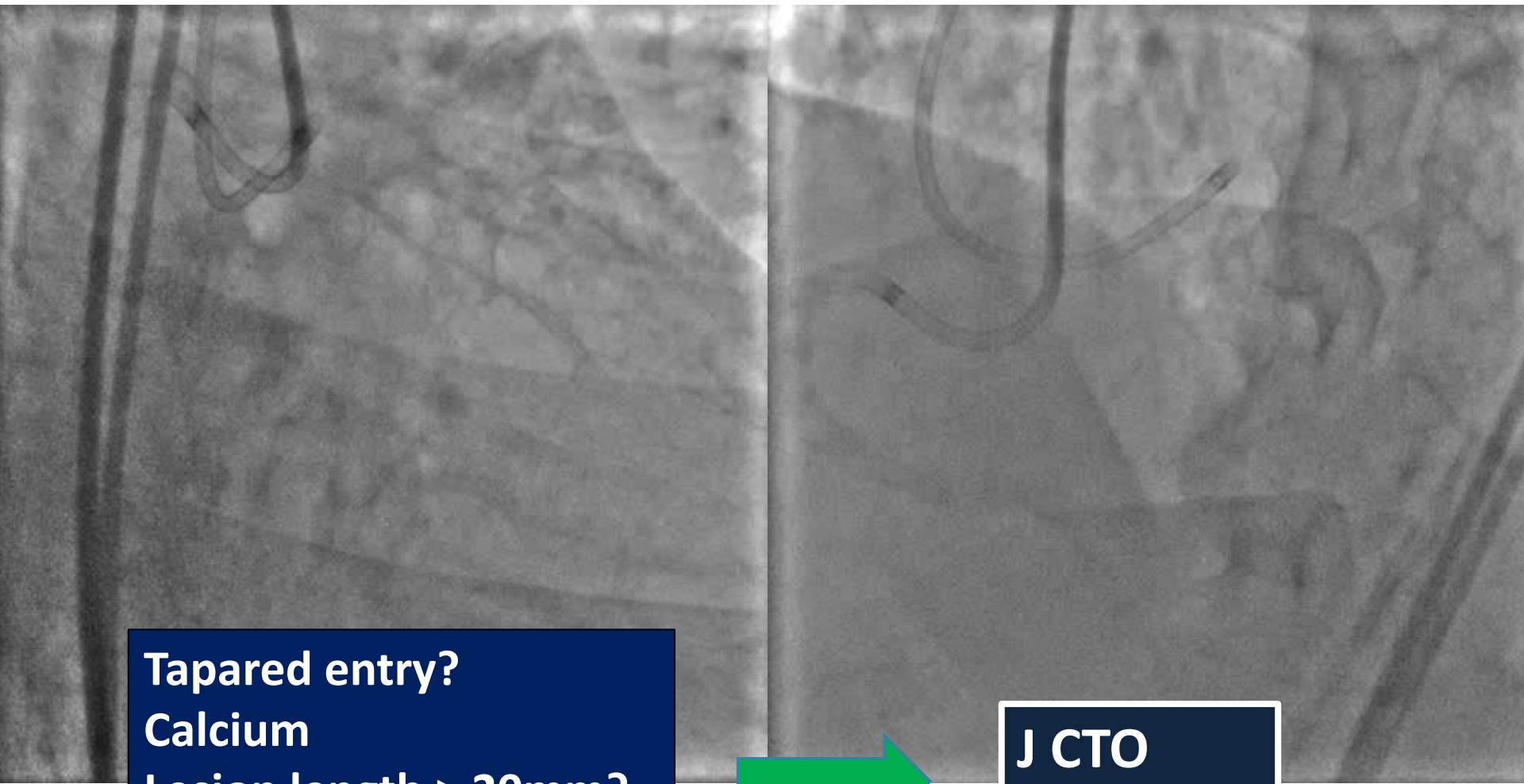
What is the difference?

- ✓ J CTO score is 0 in case 1 and 2
- ✓ Same anatomy in coronary CTA
- ✓ Same GW was used (Gaia 2)
- ✓ Procedure was extremely different



- ✓ The only difference is the anatomy of CTO exit. Wide and clear distal exit in case 1, small and ambiguous exit in standard angiography in case 2.

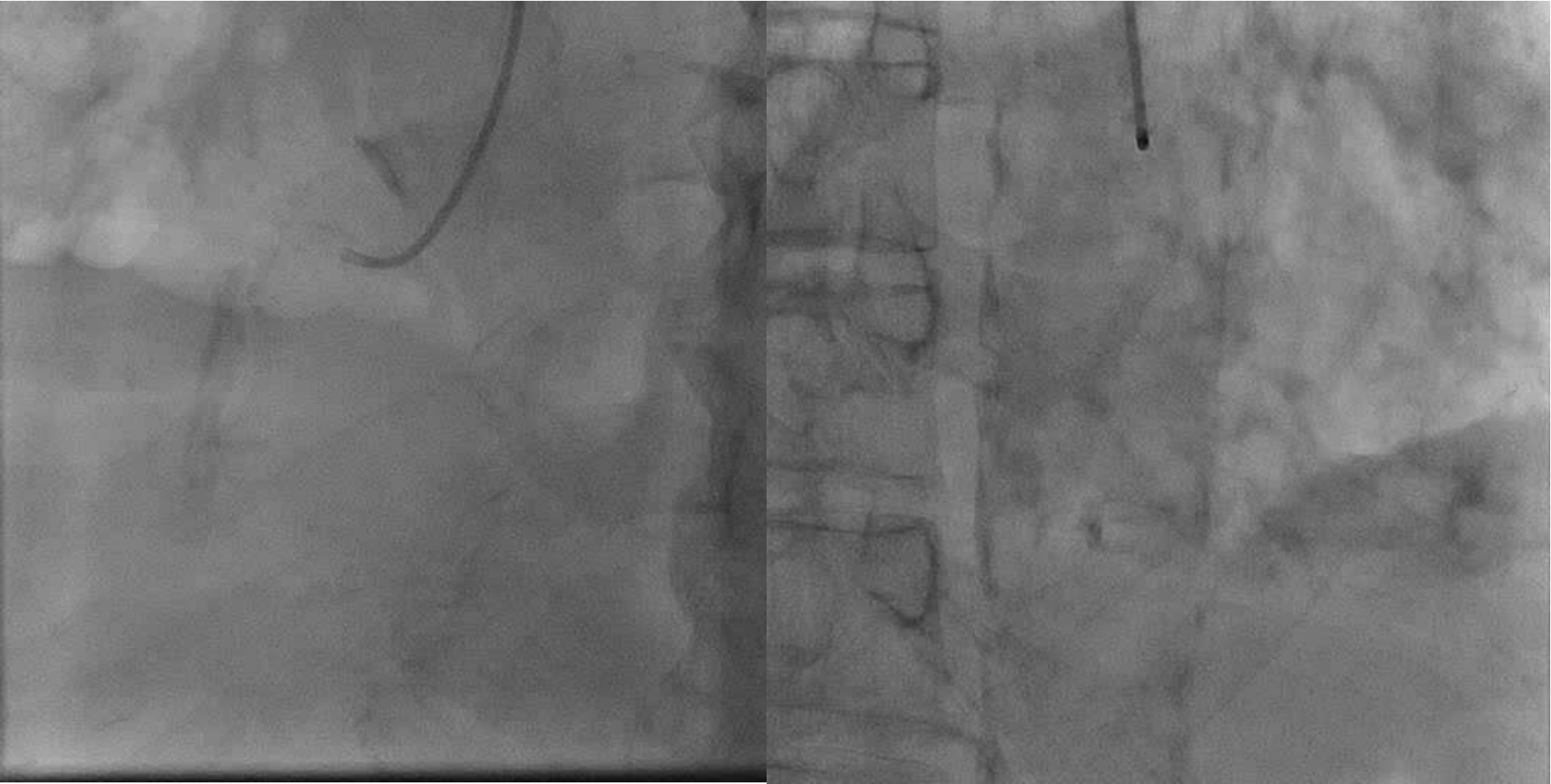
Case 3: Baseline angiograms



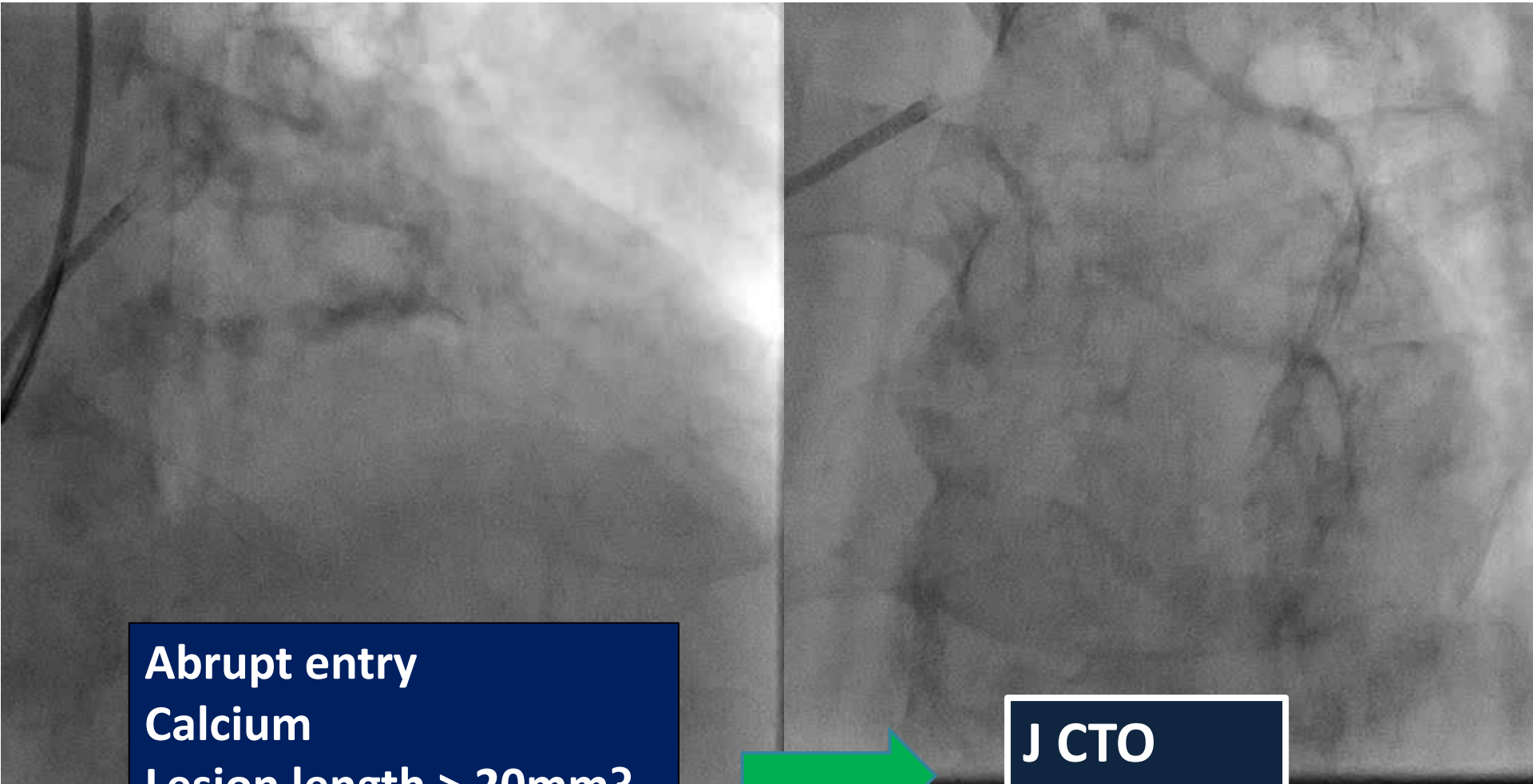
Tapared entry?
Calcium
Lesion length > 20mm?
No bend
First attempt

J CTO
score = 2

Case 4: Baseline angiograms



Case 4: Collateral

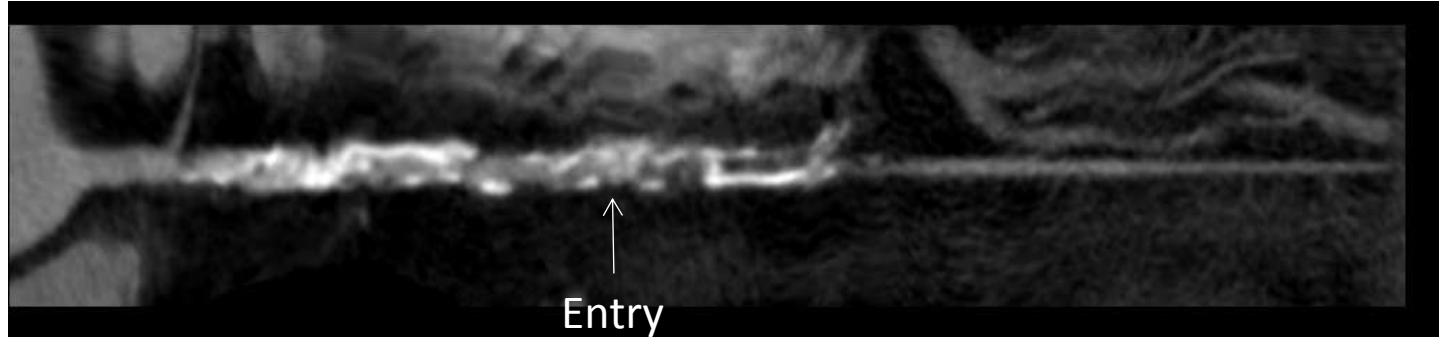


Abrupt entry
Calcium
Lesion length > 20mm?
Bend?
First attempt



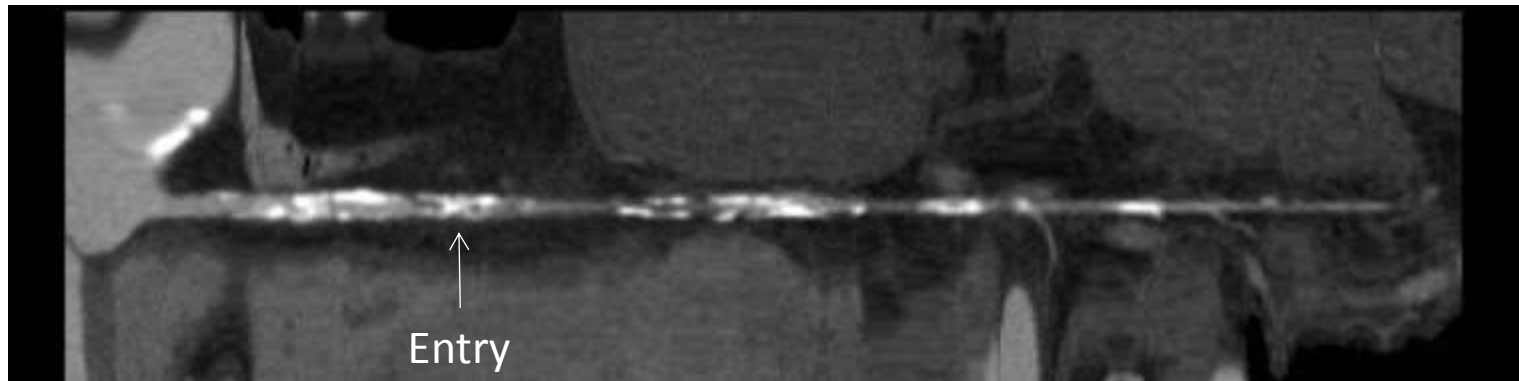
J CTO
score = 2

Coronary CTA



case 3

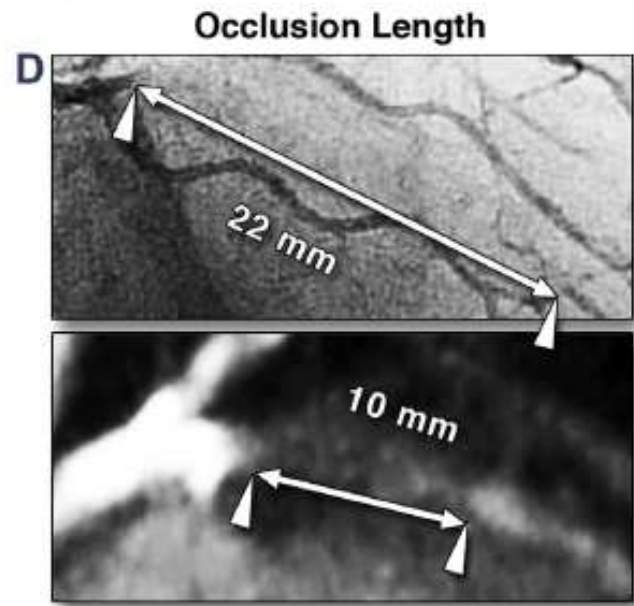
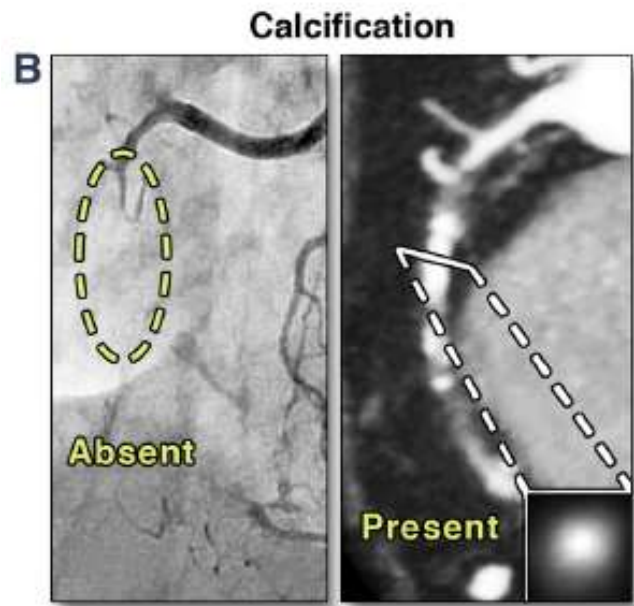
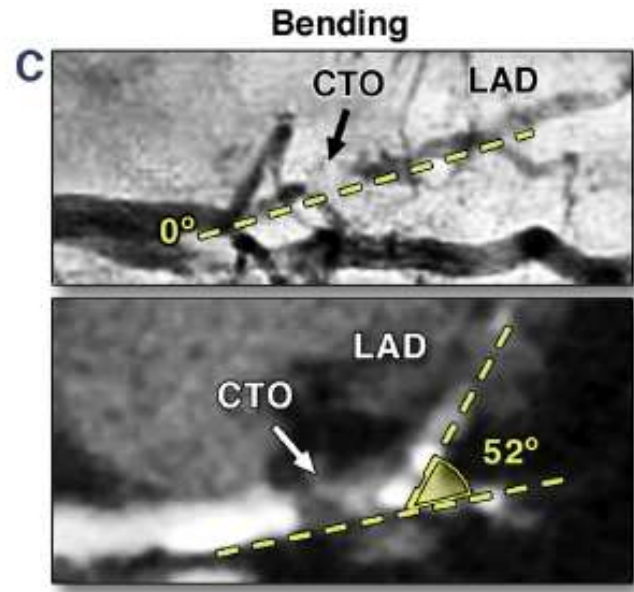
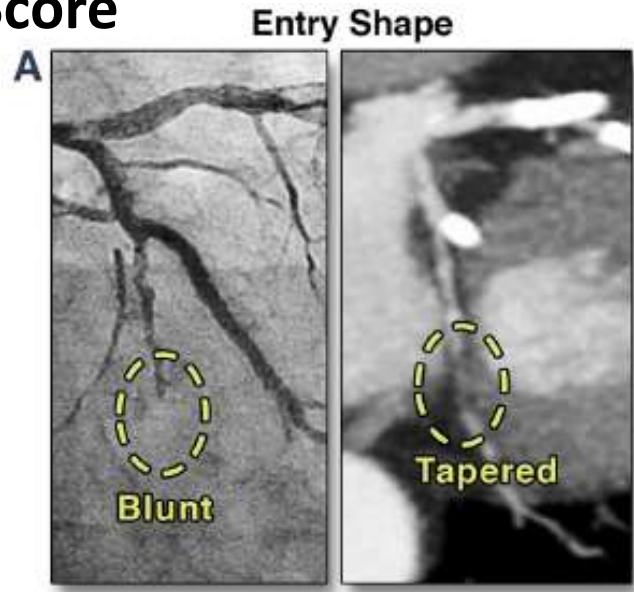
J CTO score = 1



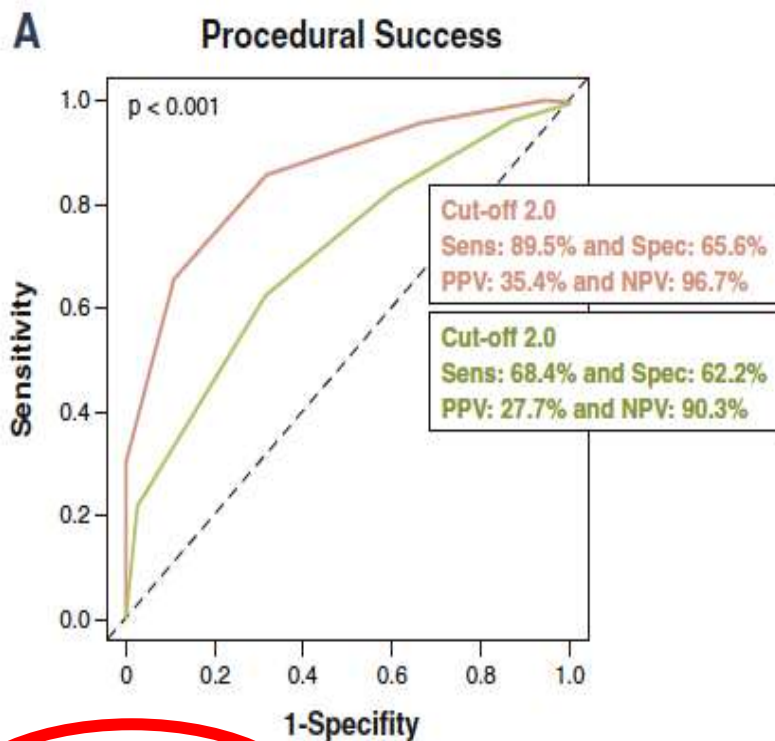
case 4

Contrast clearly seen in the segment

Representative Cases Showing Discrepancies Between CTA and Conventional Angiography Regarding 4 Morphologic Characteristics of J-CTO Score

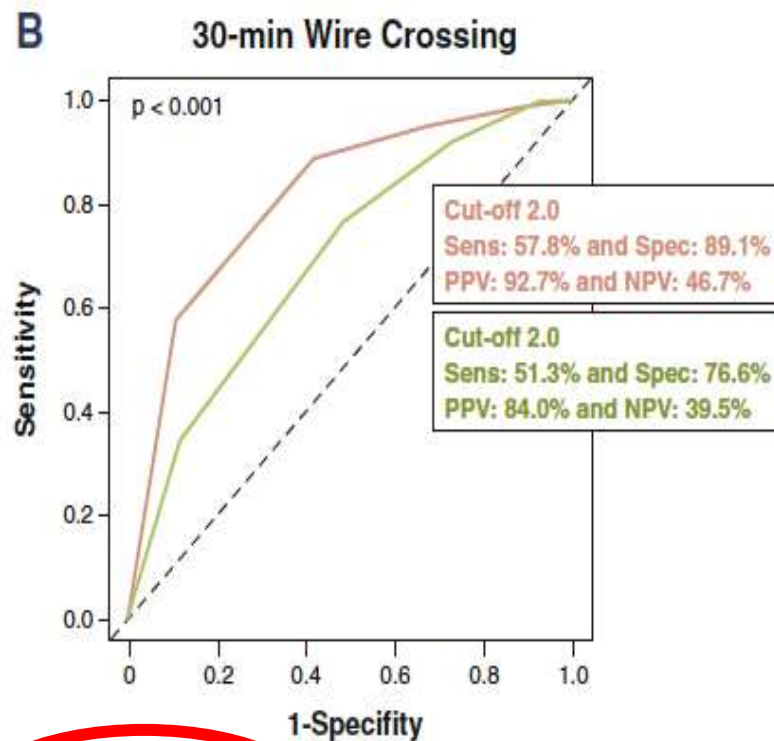


CCTA-derived J-CTO score might be a more useful predictor of successful PCI of CTO than CAG-derived J-CTO score



— CTA-derived Score
AUC 0.855

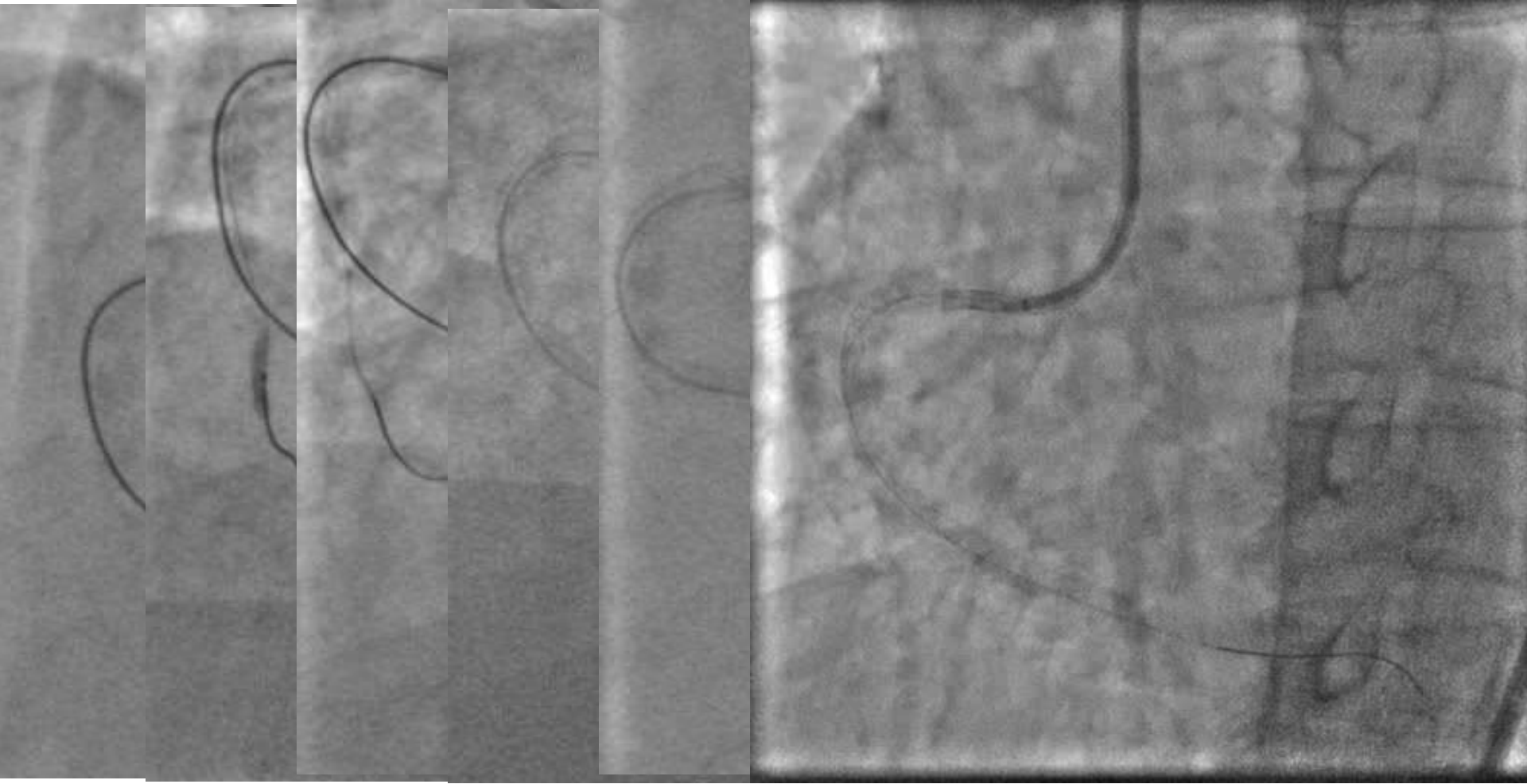
— Angiography-derived Score
AUC 0.698



— CTA-derived Score
AUC 0.812

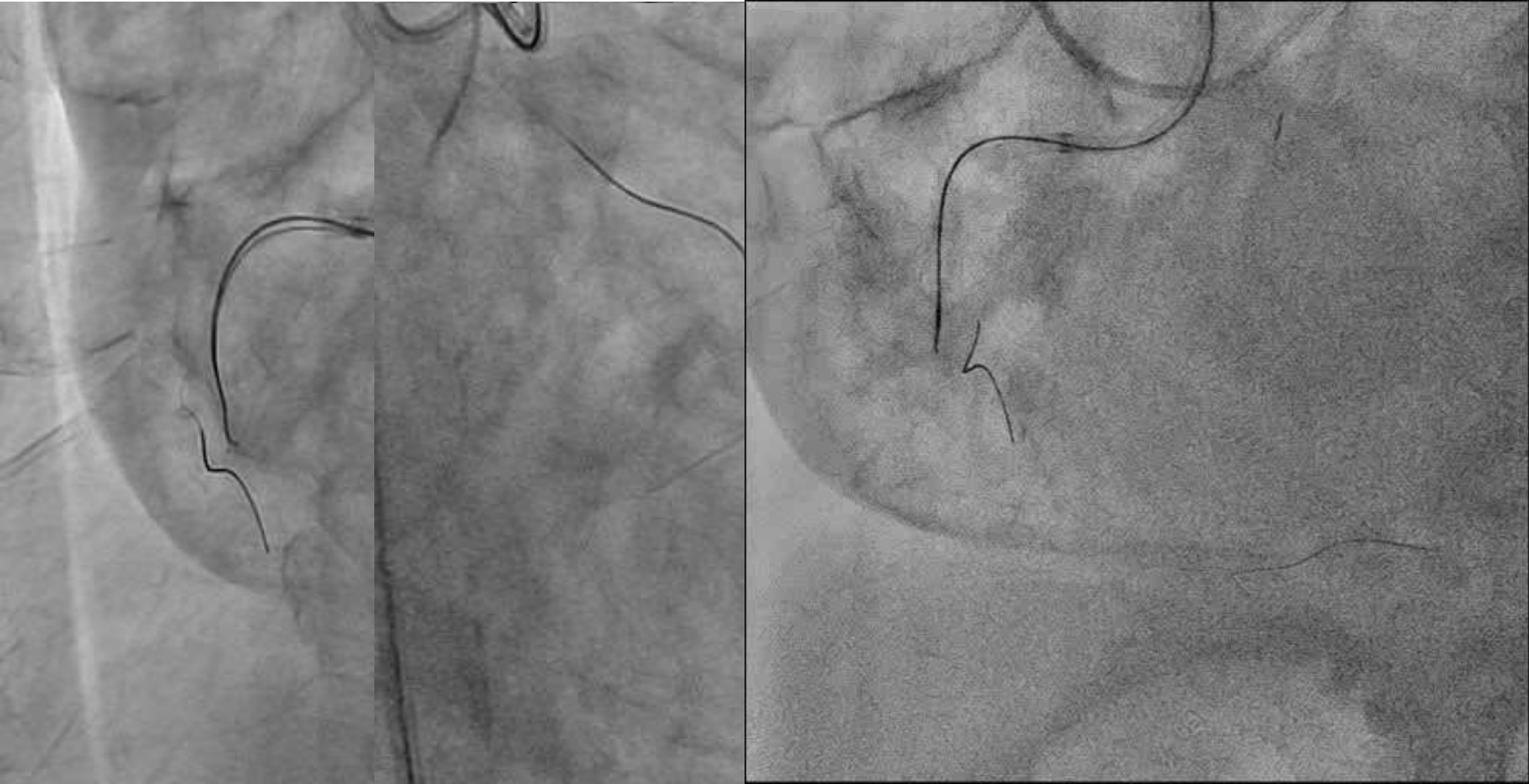
— Angiography-derived Score
AUC 0.692

Case 3: Antegrade approach



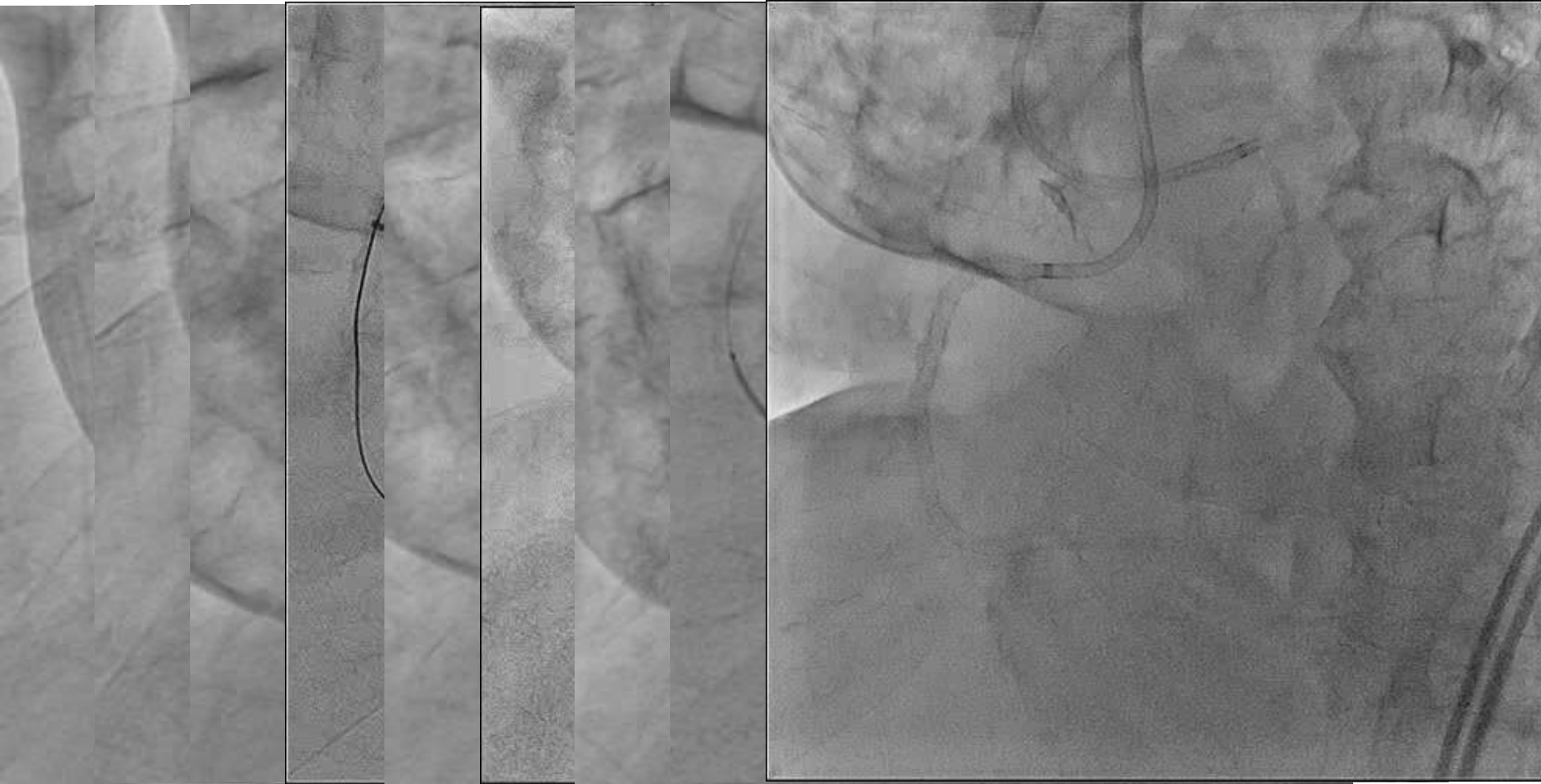
A Fielder XTR GW easily passed the lesion, however, it was very difficult to advance devices. Finally rotational atherectomy successfully opened the vessel.

Case 4: Difficult for Antegrade approach



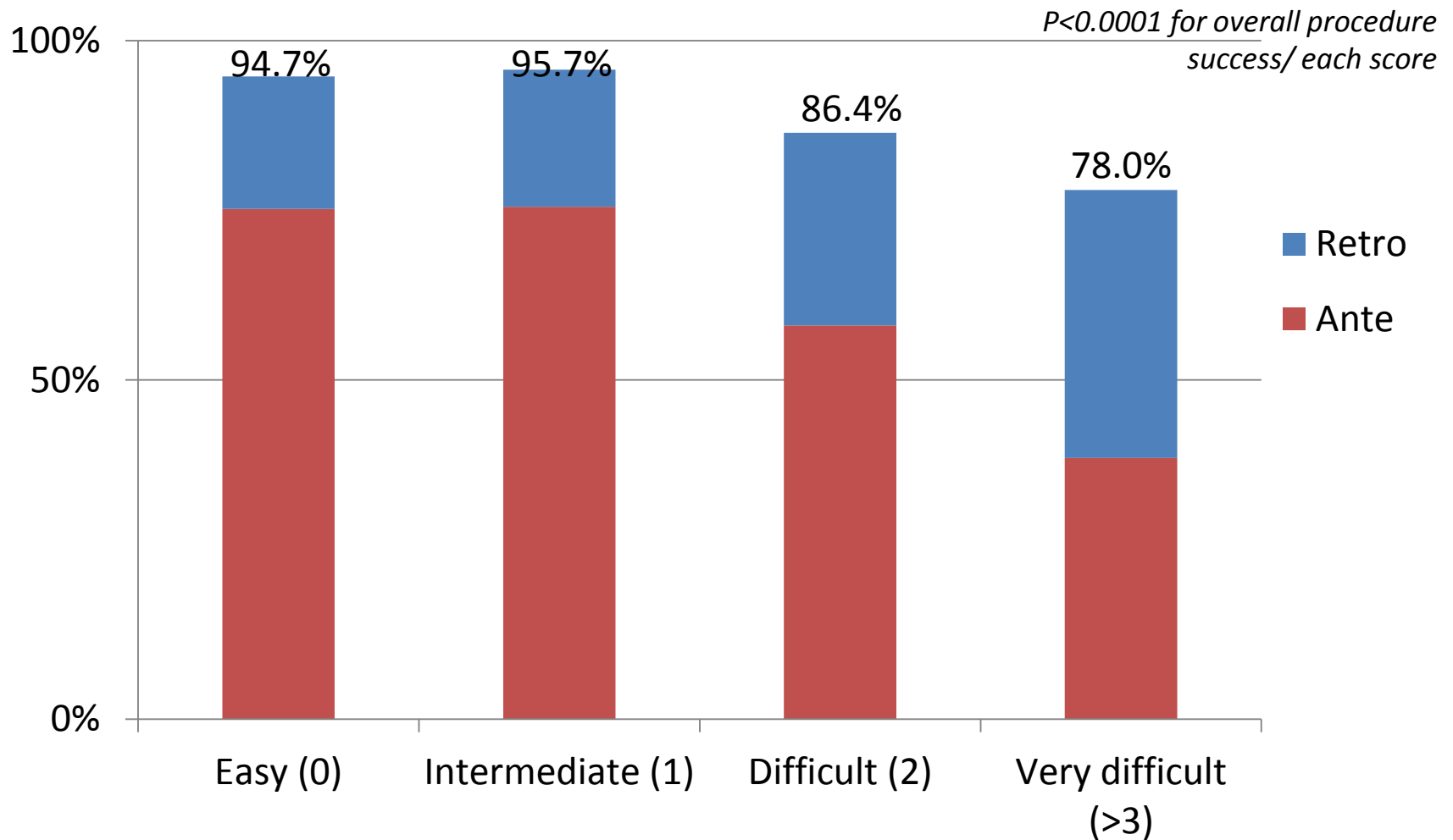
No advancement of GW via antegradely. Retrograde floppy wire advanced to the proximal easily.

Case 4: Retrograde approach

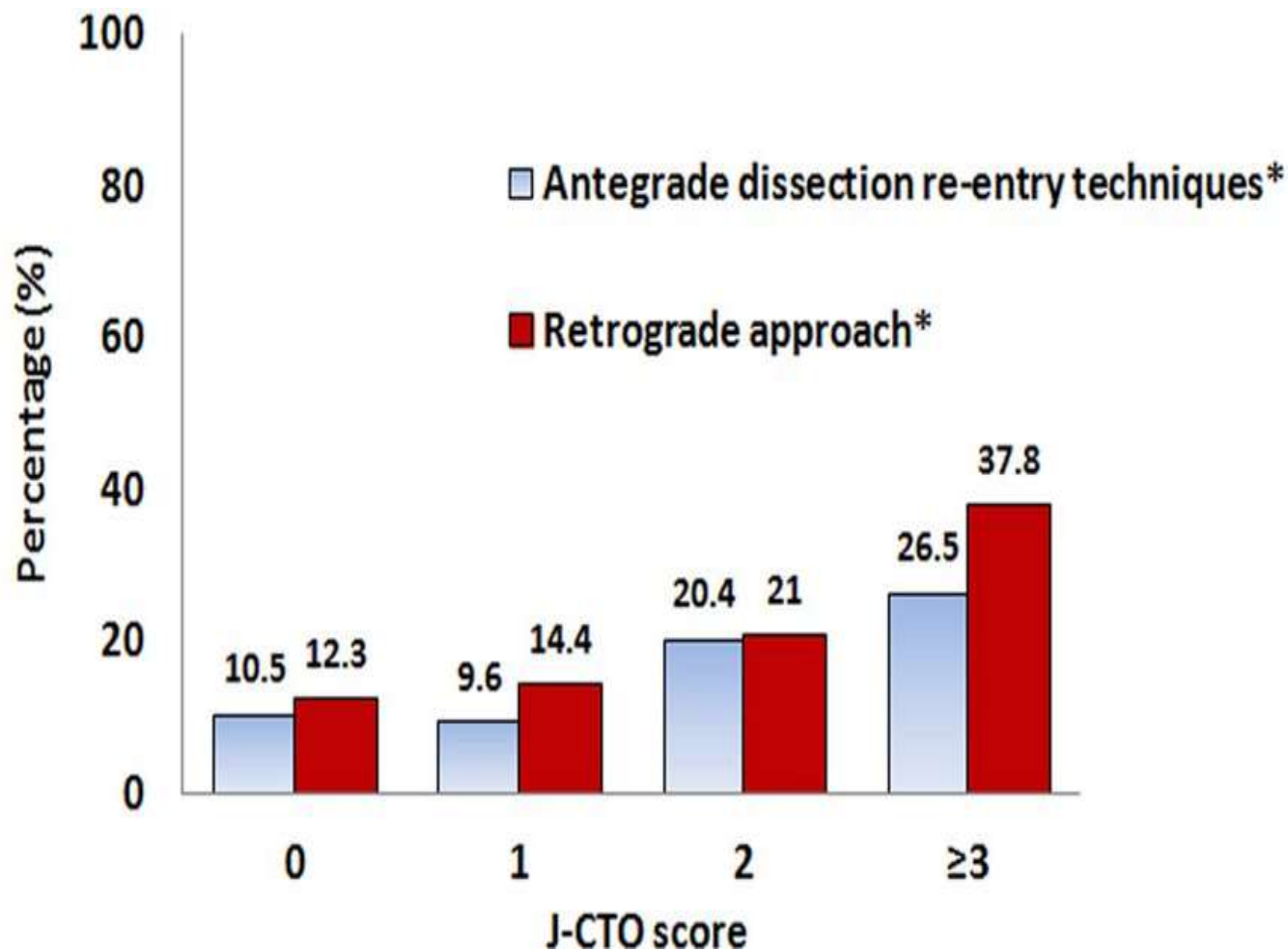


Retrograde injection revealed lesion length is short. Antegrade conquest pro 8-20 and step down to Fielder XTR crossed the lesion antegradely. Very difficult to advance devices. Finally rota bare wiring and rotational atherectomy successfully opened the vessel.

Retrograde summit: Procedure success by J-CTO score

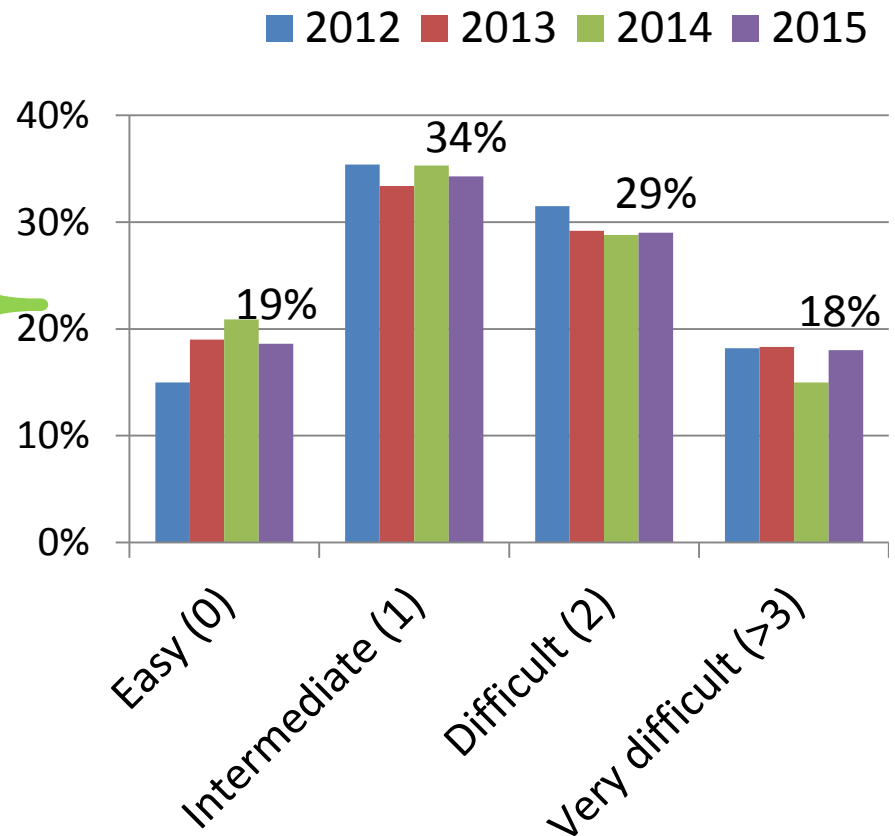


CTO Recanalization Techniques According to J-CTO score

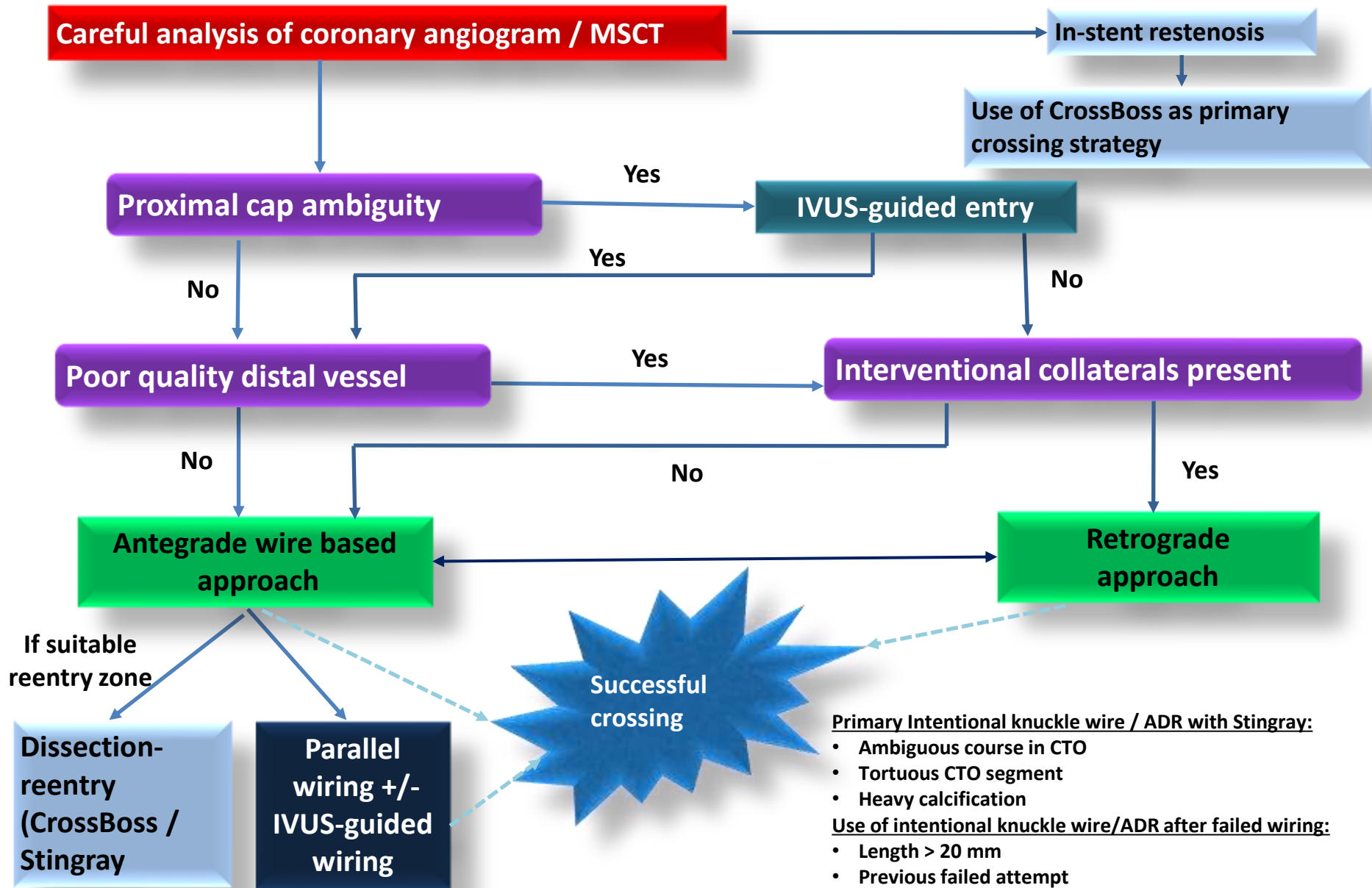


Retrograde summit: Overall J-CTO score

Parameters	2015
Entry shape: Blunt/none/unclear	52.1%
Calcification: Presence	25.0%
Bending: >45 degrees	11.8%
Occlusion length: ≥ 20 mm	49.1%
Re-try lesion: Yes	10.4%
Average JCTO-score	1.5 \pm 1.0
Exit shape: Blunt/none/unclear	55.6%



More than 50% of case has unsuitable morphology of CTO exit, which has not been investigated in J-CTO study



Consider stopping if > 3 hr; 3.7x eGFR ml contrast; Air Kerma > 5 Gy unless procedure well advanced.

Message

- J CTO score has been using to assess difficulty for CTO PCI.
- However, procedure detail was not mentioned.
- Many studies show retrograde approach has been increased as a J CTO score increased.
- Retrograde approach is necessary even in low J CTO score groups.
- CCTA derived J CTO score might be more useful scoring system than angiographically derived J CTO score.
- The important thing is exit port morphology and identification of that point clearly.
- Referring algorithm is helpful to build a strategy.